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10/586,297	07/13/2006	Harald Faber	4959/PCT	4116

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FASSE PATENT ATTORNEYS, P.A.
P.O. BOX 726
HAMPDEN, ME 04444-0726

EXAMINER	
WOOD, JONATHAN K	
ART UNIT	PAPER NUMBER
3754	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,297	FABER ET AL.	
	Examiner	Art Unit	
	JONATHAN WOOD	3754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,10-23 and 25-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,10-23 and 25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 2, 10-13, 16, 17, 20, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,978,252 to *Sperber* (*Sperber*) in view of US Patent No. 4,844,101 to *Hirsch et al.* (*Hirsch*), US Patent No. 3,913,800 to *Logan* (*Logan*) and US Patent No. 4,823,993 to *Siegel et al.* (*Siegel*).

Regarding claim 1, *Sperber* shows a cellular wheel sluice (66) constructed as an axial blow-through sluice comprising a supply chute (14) and there below a cellular wheel provided with radial cellular wheel webs (74) forming dosing chambers on a cellular wheel core (72) (80) that is arranged to rotate about a horizontal axis (center of

72) in a housing (68) which has blow-in and blow-out holes (82 and 84, respectfully) arranged in the housing below the horizontal axis of the cellular wheel within a rotational area of the cellular wheel webs and positioned opposite each other in vertical side walls (rear end wall and front end wall, col. 5, ll. 8-12) of the housing (Figure 4, col. 5, ll. 8-17), wherein the cellular wheel webs are provided with gap seals (78) positioned at radial outer ends thereof (col. 4, ll. 66-68). *Sperber* fails to disclose the area of the blow-in hole having an injection nozzle, the gap seals being spaced from a cylindrical wall of the housing and being made of a material as hard as a metal, or a counter cutting member.

However, *Hirsch* shows a cellular wheel sluice (16), characterized in that an injection nozzle (18) is integrated in the area of the blow-in hole (Figure 2). Further, *Logan* shows a rotary feeder with cellular wheel webs (17) which have gap seals (30) attached thereto which are spaced from a cylindrical housing wall (col. 2, ll. 61-64) and are made of a material as hard as a metal (col. 4, ll. 7-9). It would have been obvious to one having ordinary skill in the art at the time of the invention, under the teachings of *Hirsch*, to have included an injection nozzle structure like that of *Hirsch* in the area of the blow-in hole of *Sperber* in order to increase the velocity of the transport stream and consequently accelerate the conveying effect of the particulate in the dosing chamber out of the blow-out hole (*Hirsch*, col. 6, ll. 13-17). It would have been further obvious to one having ordinary skill in the art at the time of the invention, under the teachings of *Logan*, to have replaced the gap seals 78 of *Sperber* with the gap seals of *Logan* which

are made of metal and spaced from the housing wall in order to reduce wear (*Logan*, col. 1, ll. 28-37 and col. 2, ll. 7-9).

The device of *Sperber* as modified by *Hirsch* and *Logan* further shows the radially outer edges of the gap seals (*Logan*, 32) are configured as shear-cutting edges (a sharp cornered piece of metal is inherently a cutting edge, see the Response to Arguments section for further discussion) that are oriented facing circumferentially forward in a rotation direction of the cellular wheel (*Sperber* is silent in regards to the direction of rotation of the cellular wheel, but one of ordinary skill would recognize that it is common practice in the art for the sealing members to be on the rotationally forward side of the wheel webs, see for example US Patent No. 4,231,495 to Lund). *Sperber* as modified by *Hirsch* and *Logan* still does not disclose a counter cutting member.

However, *Siegel* discloses a rotary feeder which utilizes a counter-cutting member with a counter-cutting edge (16) which is arranged in the supply chute (Figure 4) and is circumferentially downstream with respect to the rotation direction of the cellular wheel (Figure 4, note rotation direction arrow), wherein the counter-cutting edge is arranged to cooperate with an edge of the wheel webs (6) to shear-cut particles (col. 5, ll. 59-63). It would have been obvious to one of ordinary skill in the art at the time of the invention, under the teachings of *Siegel*, to have provided a counter-cutting member with a counter-cutting edge like that of *Siegel* in the supply chute 14 of the cellular wheel sluice of *Sperber* as modified by *Hirsch* and *Logan* in order to avoid jamming or squeezing of the grains of particulate material between the edge surfaces of the gap

seals (*Logan*, 32) and the inside wall of the housing (*Sperber*, inside of 68) (*Siegel*, col. 6, ll. 15-18).

Regarding claim 2, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the injection nozzle (*Hirsch*, 18) is set-in coaxially and inwardly in a blow-in pipe socket (*Hirsch*, 20) secured to the blow-in hole (*Sperber*, 82), the injection nozzle causing a reduction of the blow-in cross-section in the area of the blow-in hole relative to the blow-in pipe socket cross-section (*Hirsch*, Figure 2).

Regarding claim 10, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the blow-in hole (*Sperber*, 82) and the blow-out hole (*Sperber*, 84) are positioned axially opposite each other in the vertical side walls of the housing (*Sperber*, Figure 1, col. 5, ll. 8-17), and the cross-sectional area of the blow-out hole has about the cross-section of the dosing chamber (*Sperber*, Figure 4).

Regarding claim 11, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the injection nozzle (*Hirsch*, 18) is constructed as a pipe shape (*Hirsch*, Figure 2) and comprises a nozzle opening having a diameter corresponding to less than one half of the median diameter of the dosing chamber (*Hirsch*, Figure 2).

Regarding claim 12, *Sperber* as modified by *Hirsch, Logan* and *Siegel* shows the gap seals are constructed as separate components that are made of a spring steel or other low wear steel alloy (*Logan*, col. 4, ll. 7-14) and that they are exchangeably secured to the cellular wheel webs (*Logan,* col. 2, ll. 53-53).

Regarding claim 13, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the counter-cutting member is a counter-cutting blade (*Siegel*, 16) arranged in the supply chute parallel to shear-cutting edges of the gap seals (inherent since the gap seals rotate 360 degrees and the blade would be parallel with them at some point throughout the rotation).

Regarding claim 16, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the counter-cutting edge is arranged at a circumferentially skewed slant to the horizontal axis (*Siegel*, Figure 1 or 2).

Regarding claim 17, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the radial spacing gap (*Logan*, S) having a radial measure from 0.2 mm to 0.5 mm (*Logan*, Figure 3, see Y-Axis of chart).

Regarding claim 20, *Sperber* shows a blow-through cellular wheel feeder (66) comprising a housing (68) that comprises a cylindrical wall (indicated by 66 in Figure 1) extending concentrically around a horizontal axis (center of 72) and planar vertical side walls (rear end wall and front end wall, col. 5, ll. 8-12) at axial ends of the cylindrical wall, a supply chute (14) that communicates into the cylindrical space through a supply opening (58) in the cylindrical wall, a cellular wheel that comprises plural cellular wheel webs (74) extending radially outwardly from a central wheel hub (72), and respective gap seals (78) arranged at radially outer edges of the wheel webs (col. 4, ll. 66-68), wherein the wheel webs and hub define dosing chambers (80) with the cylindrical wall of the housing, a blow-in hole (82) provided below the horizontal axis in a first side wall,

and a blow-out hole (84) provided below the horizontal axis axially across from the blow-in hole (Figure 4, col. 5, ll. 8-17) in a second side wall. *Sperber* fails to disclose an injector nozzle mounted to the housing at the blow-in hole, the gap seals being arranged to leave a radial spacing between the gap seals and the cylindrical housing wall and being made of a material as hard as a metal, and a counter cutting member.

However, *Hirsch* shows a cellular wheel sluice (16), characterized in that an injector nozzle (18) is mounted to a housing (16a) at a blow-in hole (Figure 2, via 20) Further, *Logan* shows a rotary feeder with cellular wheel webs (17) which have gap seals (30) attached thereto which are arranged to leave a radial spacing (S) from a cylindrical housing wall (col. 2, ll. 61-64) and are made of a material as hard as a metal (col. 4, ll. 7-9). It would have been obvious to one having ordinary skill in the art at the time of the invention, under the teachings of *Hirsch*, to have included an injector nozzle structure like that of *Hirsch* attached to the housing of *Sperber* at the blow-in hole in order to increase the velocity of the transport stream and consequently accelerate the conveying effect of the particulate in the dosing chamber out of the blow-out hole (*Hirsch*, col. 6, ll. 13-17). It would have been further obvious to one having ordinary skill in the art at the time of the invention, under the teachings of *Logan*, to have replaced the gap seals 78 of *Sperber* with the gap seals of *Logan* which are made of metal and spaced from the housing wall in order to reduce wear (*Logan*, col. 1, ll. 28-37 and col. 2, ll. 7-9).

The device of *Sperber* as modified by *Hirsch* and *Logan* further shows the radially outer edges of the gap seals (*Logan*, 32) are configured as shear-cutting edges

(a sharp cornered piece of metal is inherently a cutting edge, see the Response to Arguments section for further discussion) that are oriented facing circumferentially forward in a rotation direction of the cellular wheel (*Sperber* is silent in regards to the direction of rotation of the cellular wheel, but one of ordinary skill would recognize that it is common practice in the art for the sealing members to be on the rotationally forward side of the wheel webs, see for example US Patent No. 4,231,495 to Lund). *Sperber* as modified by *Hirsch* and *Logan* still does not disclose a counter cutting member.

However, *Siegel* discloses a rotary feeder which utilizes a counter-cutting member with a counter-cutting edge (16) which is arranged in the supply chute (Figure 4) and is circumferentially downstream with respect to the rotation direction of the cellular wheel (Figure 4, note rotation direction arrow), wherein the counter-cutting edge is arranged to cooperate with an edge of the wheel webs (6) to shear-cut particles (col. 5, ll. 59-63). It would have been obvious to one of ordinary skill in the art at the time of the invention, under the teachings of *Siegel*, to have provided a counter-cutting member with a counter-cutting edge like that of *Siegel* in the supply chute 14 of the cellular wheel sluice of *Sperber* as modified by *Hirsch* and *Logan* in order to avoid jamming or squeezing of the grains of particulate material between the edge surfaces of the gap seals (*Logan*, 32) and the inside wall of the housing (*Sperber*, inside of 68) (*Siegel*, col. 6, ll. 15-18).

Regarding claim 21, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows the radial spacing gap (*Logan*, S) having a radial measure from 0.2 mm to 0.5 mm (Figure 3, see Y-Axis of chart).

Regarding claim 25, *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* shows a deflector scraper (98a with 110a) protruding from the chute side wall into the supply chute above the counter-cutting member (*Sperber*, Figure 4).

4. Claims 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sperber* in view of *Hirsch*, *Logan*, and *Siegel* as applied to claims 1 and 20 above, and further in view of US Patent No. 4,155,486 to *Brown* (*Brown*).

Sperber as modified by *Hirsch*, *Logan* and *Siegel* shows all aspects of applicant's invention as set forth in claims 1 and 20, but does not disclose the housing having a wear liner. However, *Brown* shows a rotary feeder (10) with a housing (12), wherein the inside of the housing has a wear liner (42) made of wear-resistant material (col. 3, ll. 3-9 and col. 4, ll. 23-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided the inside of the housing of *Sperber* as modified by *Hirsch*, *Logan* and *Siegel* with a wear-resistant liner in order to prevent wear of the housing over time.

5. Claims 15, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sperber* in view of *Hirsch*, *Logan* and *Siegel* as applied to claims 1 and 20 above, and further in view of US Patent No. 4,906,144 to *Matsueda* (*Matsueda*).

Sperber as modified by *Hirsch*, *Logan* and *Siegel* discloses the claimed invention except that the wheel webs are straight instead of helical. *Matsueda* discloses that a helical wheel web is an equivalent structure to a straight wheel web (col. 5, ll. 63-68). Therefore, because these two types of wheel webs were art-recognized equivalents at the time of the invention, one of ordinary skill in the art would have found it obvious to substitute helical wheel webs for the straight wheel webs. Regarding claim 28, a helical wheel web would inherently extend at a slant relative to the horizontal axis.

6. Claims 18, 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sperber* in view of *Hirsch*, *Logan*, and *Siegel* as applied to claims 1 and 20 above, and further in view of US Patent No. 5,725,332 to *Harper et al*. (*Harper*).

Sperber as modified by *Hirsch*, *Logan* and *Siegel* shows all aspects of applicant's invention as set forth in claims 1 and 20, but does not disclose the dosing chambers and blow-out hole having a trapezoidal shape. However, *Harper* teaches a rotary feeder (10) which has trapezoidally shaped dosing chambers (26, Figure 2) and a correspondingly shaped trapezoidal blow-out hole (40, col. 4, ll. 22-25). It would have been obvious to one having ordinary skill in the art at the time of the invention to have made the dosing chambers and blow-out hole trapezoidal in order to increase the strength of the hub 72 by increasing its diameter as well as to ensure efficient airflow through the dosing chamber by shaping the blow-out hole similarly to the dosing chambers.

Response to Arguments

7. Applicant's arguments filed 1/13/2010 have been fully considered but they are not persuasive.

Regarding page 17, last paragraph to page 18, middle paragraph, applicant argues against the *Logan* reference teaching the radially outer ends of the gap seals having a shear-cutting edge. In the rejection of claims 1 and 20, examiner stated "a sharp cornered piece of metal is inherently a cutting edge". As an example, reference is made to US Patent No. 4,231,495 to *Lund*. *Lund* shows a rotary feeder with gap seals or blades (34) attached to the ends of the wheel webs. Lund states that these attachments are rectangular in shape (col. 2, ll. 33-34) and that they also act as a shearing edge with a counter cutting member (58) (col. 3, ll. 15-18). Therefore, Lund shows that a rectangularly shaped web attachment inherently acts as a cutting edge. Looking at the gap seals of *Logan*, although taught as having an outer end curvature mirroring the curvature of the chamber 10, the circumferential width of the seals is such that the outer edges are only curved slightly and a sharp edge is still present to act as a cutting edge in a manner exactly like that of Lund. Therefore, even though *Logan* does not explicitly state that the radial ends of the gap seals are sharp, the inherent sharp and shearing nature of a cornered piece of metal (as demonstrated by Lund) means they act as a shear-cutting edge.

Regarding the last paragraph of page 18, examiner is not suggesting that *Logan* teaches a counter-cutting edge and therefore the argument is moot.

Regarding page 19, second paragraph (leading into page 20), applicant argues that the since *Logan* teaches a rotary feeder and not an axial blow-through feeder, one of ordinary skill would not have been able to combine the teachings of *Logan* with the axial blow-through feeder of *Sperber*. Applicant then specifically cites pressure considerations as a major difference between the two types of apparatuses. However, *Logan* specifically addresses adjusting the spacing S of the gap seals to accommodate for varying pressure conditions (see col. 3 of *Logan*) and therefore one of ordinary skill would recognize the applicability of the teachings to a wide array of pressure conditions. Further, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, applicant's general field of endeavor is simply a rotary feeding device, gravitational, axial blow-through or any other type. Therefore, it is not incorrect to consider *Logan* analogous art.

Regarding arguments under section number 6, from page 20 to page 22, they have been considered but are moot in view of the new ground(s) of rejection.

Regarding arguments under section number 7, on page 23, applicant first argues that *Brown* is not an axial blow-through sluice and therefore can not be considered related art. Examiner responds by referencing applicant to the statements above in regard to *In re Oetiker*. Applicant then argues that because the seal blades of *Brown* purposely contact the inner wall of the housing and the seal blades of applicant's

invention do not contact the inner wall of the housing, the reason and purpose of *Brown* for providing the wear-resistant liner would no longer exist. Examiner contends that *Brown* never states that the wear liner is used specifically to prevent wear resulting from the blades contacting the interior of the housing. Additionally, and more pertinently, *Brown* states that the seal blades may be spaced from the housing (col. 4, ll. 28-30), thus making applicant's argument moot.

Regarding arguments under section number 8, on page 24, applicant first argues that *Matsueda* is not an axial blow-through sluice and therefore can not be considered related art. Examiner responds by referencing applicant to the statements above in regard to *In re Oetiker*. Applicant then argues that the seal blade tips of *Matsueda* purposely contact the inner wall of the cylindrical housing thus the pertinent teachings are directed away from the present invention. Examiner contends that the fact that the seal blade tips of *Matsueda* contact the inner wall of the housing is irrelevant to the pertinent teachings of *Matsueda* because the pertinent teaching is regarding the manner in which the wheel webs connect to the wheel core, regardless of the type of blade tips involved. One of ordinary skill would recognize that if straight and helical wheel webs configurations are considered equivalents on a rotary feeder where the blade tips contact the housing, they would also be equivalent configurations where the blade tips are spaced from the housing.

Regarding arguments under section number 9, on page 25, applicant argues that the blade tips of *Harper* seal against the inner wall of the housing and therefore the teachings are contrary to the present invention. Examiner contends that the fact that

the seal blade tips of *Harper* contact the inner wall of the housing is irrelevant to the pertinent teachings of *Harper* because the pertinent teaching is regarding the shape of the blow-in hole and blow-out hole, which is unrelated to the type of blade tips involved. One of ordinary skill would recognize that if trapezoidal blow in and blow out holes are advantageous on a rotary feeder where the blade tips contact the housing, they may also be advantageous on a rotary feeder where the blade tips are spaced from the housing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN WOOD whose telephone number is (571)270-7422. The examiner can normally be reached on Monday through Friday, 7:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (571)272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JKW/
Examiner, Art Unit 3754

/Kevin P. Shaver/
Supervisory Patent Examiner, Art Unit 3754